



Unit 3 Lesson 2

Paperclip Chains



Use the paperclips to make paperclip chains as shown. Measure the length of each chain to the nearest $\frac{1}{4}$ inch and record this information in the table below.

Number of Paperclips	Length of Chain (inches)
1	
2	
3	
4	
5	

- 1 How long would you expect a paperclip chain made of 15 paperclips to be? Justify your answer.
- 2 How long would you expect a paperclip chain made of 100 paperclips to be? Justify your answer.
- 3 How many paperclips would it take to make a chain 625 inches long? Justify your answer.



Pesky Pattern Summary

Pattern A

- 1 What patterns do you notice in the table and/or the graph?

- 2 If an item is discounted \$8, what is the regular price of the item? Justify your answer.

- 3 If an item has a regular price of \$5, how much is the discount? Justify your answer.

- 4 If an item is discounted \$6, what is the sale price? Justify your answer.

Pattern B

- 5 What patterns do you notice in the table and/or the graph?

- 6 If an international call lasts 100 minutes, how much will the call cost? Justify your answer.

- 7 If an international call cost \$4.20, how many minutes long was the call? Justify your answer.



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Pesky Pattern Summary

Pattern C

- 8 What patterns do you notice in the table and/or the graph?
- 9 If a toy originally cost \$80, what is the new price of the toy? Justify your answer.
- 10 If a toy's new price is \$46, what was the toy's original price? Justify your answer.

Pattern D

- 11 What patterns do you notice in the table and/or the graph?
- 12 If a bunch of bananas costs \$2.10, how much does the bunch weigh? Justify your answer.
- 13 If a bunch of bananas weighs 9 pounds, how much would the bunch cost? Justify your answer.



Independent Practice

A proportional relationship can be identified by looking at the:

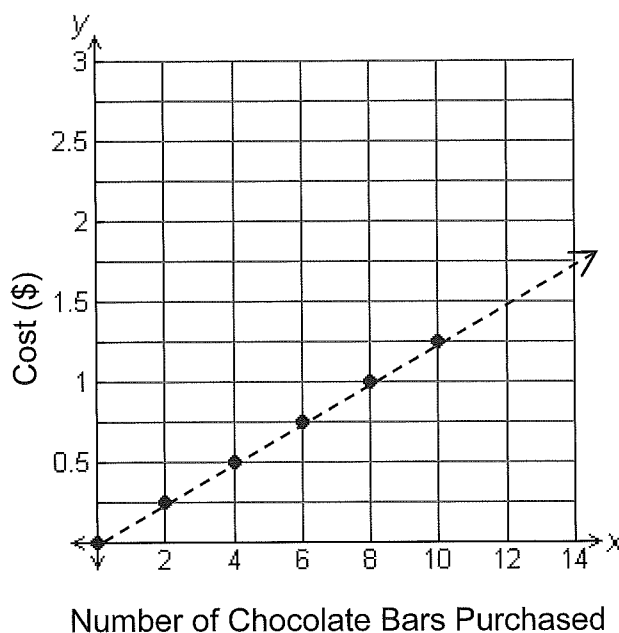
- table to see if there is a constant rate of change and a constant of proportionality
- graph to see if it is a line that passes through the origin
- equation to see if it fits the form $y = kx$

A convenience store sells 2 miniature chocolate bars for 25¢. How many miniature chocolate bars could be purchased with \$2.75?

Cost of Miniature Chocolate Bars

Number of Chocolate Bars Purchased	Cost	Value of k
2	\$0.25	$\frac{0.25}{2} = 0.125$
4	\$0.50	$\frac{0.50}{4} = 0.125$
6	\$0.75	$\frac{0.75}{6} = 0.125$
8	\$1.00	$\frac{1}{8} = 0.125$
10	\$1.25	$\frac{1.25}{10} = 0.125$
x	$0.125x$	

Cost of Miniature Chocolate Bars



There is a constant rate of change of \$0.25 for every 2 chocolate bars purchased and the equation fits the form $y = kx$.

There is a constant of proportionality of 0.125.

The graph is a line which passes through the origin.

To determine the number of miniature chocolate bars that can be purchased with \$2.75, extend the table, extend the graph, or solve the equation $2.75 = 0.125x$. With \$2.75, 22 miniature chocolate bars can be purchased.

- 1 A peanut butter manufacturing company determined that a jar of peanut butter is sold every 3 seconds. At this rate, how many jars of peanut butter would be sold in an hour?



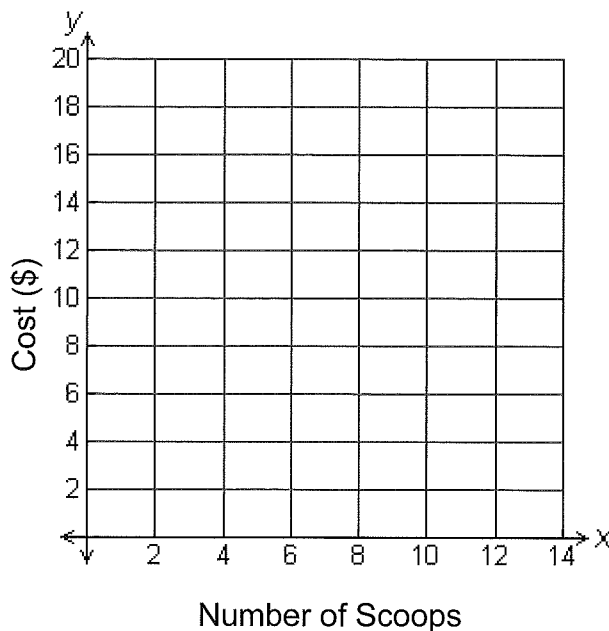
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- 2 The Creamery makes and sells ice cream sundaes by the scoop. Each scoop of ice cream costs \$1.25. Use this information to complete the table and graph below, and answer the questions that follow.

Cost of Ice Cream Sundaes

Number of Scoops	Cost in Dollars
2	
4	
5	
7	
12	
x	

Cost of Ice Cream Sundaes



- What is the rate of change? Justify your answer.
- Is there a constant of proportionality? If so, what is it? Justify your answer.
- Does the graph represent a proportional relationship? Justify your answer.
- How much would it cost to purchase a sundae with 28 scoops of ice cream? Justify your answer.
- How many scoops of ice cream could be purchased with \$20? Justify your answer.

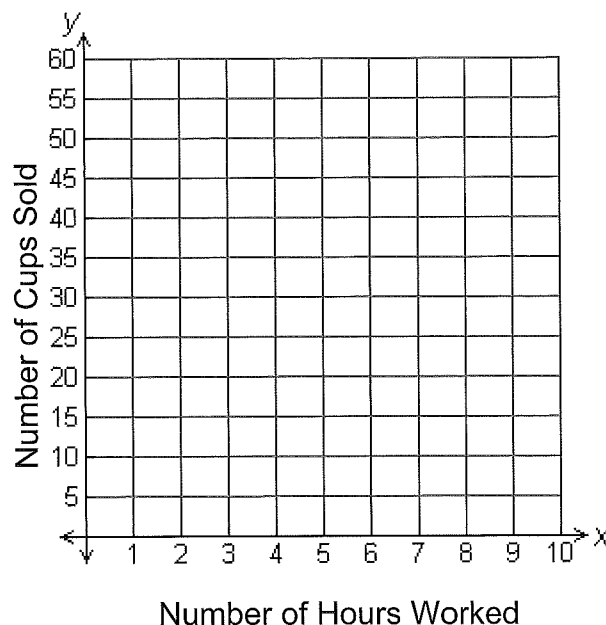


- 3 Tyne and Jae sold lemonade last weekend to raise money for new bicycles. Tyne worked at the stand on Saturday and sold 24 cups of lemonade every 4 hours. Jae worked at the stand on Sunday and sold 21 cups of lemonade every 3 hours. Use this information to:
- complete the table.
 - graph Tyne's data and Jae's data as 2 lines on the same graph.

The Lemonade Stand

Number of Hours Worked	TYNE: Number of Cups Sold	JAE: Number of Cups Sold
2		
3		21
4	24	
6		
8		
x		

The Lemonade Stand



- Is there a constant of proportionality for Tyne's lemonade sales? If so, what is it?
- Is there a constant of proportionality for Jae's lemonade sales? If so, what is it?
- How can you use the table to determine which girl sold lemonade at a faster rate?
- How can you use the graph to determine which girl sold lemonade at a faster rate?
- How many cups of lemonade will each girl have sold in 25 hours? Justify your answers.



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- 4 Marcie works as a gift wrapper in a department store. She can wrap an average of 10 gifts every 30 minutes.
- a) Write an equation that could be used to determine g , the number of gifts Marcie can wrap in h hours.
- b) How many gifts could Marcie wrap during an 8-hour shift? Justify your answer.
- 5 A package of 12 pencils costs \$0.89, and a package of 144 pencils costs \$7.20. Which package has a lower price per pencil? Justify your answer.
- 6 The Davis family drove 285 miles in 4 hours and 45 minutes. The Thompson family drove 294 miles in 5 hours and 15 minutes. Which family drove at a faster average speed? Justify your answer.
- 7 Of the 30 students in Mr. Washington's 8th grade math class, 12 students are going to the school dance Friday night. If there are 1,250 students in the school, how many could be expected to attend the dance? Justify your answer.



Hot Doggin'!

At the 2007 Nathan's Famous Fourth of July International Hot Dog Eating Contest, Joey Chestnut won first place by eating 66 hot dogs in 12 minutes. His closest competitor, Takeru Kobayashi, came in second by eating 63 hot dogs in 12 minutes. How many more hot dogs per minute did Joey eat during the competition than Takeru? Justify your answer.

FOR TEACHER USE ONLY:

a. YES NO Student arrives at a correct solution?

	4	3	2	1
b. Conceptual Knowledge				
c. Procedural Knowledge				
d. Communication				



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- 1 Brittany rode her bicycle 4.5 miles in 30 minutes. Brandon rode his bicycle 7 miles in 45 minutes. Based on these rates, which statement is true?
- A Brittany's average speed was $\frac{1}{3}$ mile per hour faster than Brandon's average speed.
- B Brandon's average speed was $\frac{1}{3}$ mile per hour faster than Brittany's average speed.
- C Brittany's average speed was $\frac{3}{20}$ mile per minute slower than Brandon's average speed.
- D Brandon's average speed was $\frac{3}{20}$ mile per minute slower than Brittany's average speed.
- 2 Milanee purchased 6 cans of soda for \$2.88. Which of the following does NOT represent the same price per can?
- A 8 cans of soda for \$3.84
- B 12 cans of soda for \$5.76
- C 15 cans of soda for \$7.35
- D 36 cans of soda for \$17.28
- 3 Tiffany works at a bank and has determined that 2 out of every 35 nickels she counts are buffalo nickels. Which proportion could Tiffany use to determine the number of buffalo nickels in the bank's inventory of 2,000 nickels?
- A $\frac{35}{2} = \frac{x}{2000}$
- B $\frac{2}{35} = \frac{2000}{x}$
- C $\frac{2}{2000} = \frac{x}{35}$
- D $\frac{2}{35} = \frac{x}{2000}$
- 4 Jeff is helping to put a new roof on his father's house. He can replace 4 roofing shingles every 10 minutes. How many roofing shingles can Jeff replace in 5 hours?
- A 19 roofing shingles
- B 24 roofing shingles
- C 100 roofing shingles
- D 120 roofing shingles